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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/536,593	09/28/2005	Kwang-Soon Kim	CU-4233 WWP	9212
26530	7590	08/27/2007		
LADAS & PARRY LLP 224 SOUTH MICHIGAN AVENUE SUITE 1600 CHICAGO, IL 60604			EXAMINER MITCHELL, NATHAN A	
			ART UNIT	PAPER NUMBER
			2609	
			MAIL DATE	DELIVERY MODE
			08/27/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/536,593

Applicant(s)

KIM ET AL.

Examiner

Nathan Mitchell

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 26 May 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-38 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 13-19, 21-27 and 29-34 is/are allowed.
- 6) ☒ Claim(s) 1 and 35 is/are rejected.
- 7) ☒ Claim(s) 2-12, 20, 28 and 36-38 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 May 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 12/02/2005.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Information Disclosure Statement***

1. The information disclosure statement (IDS) submitted on 12/02/2005 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

### ***Priority***

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Claim Objections***

3. Claims 9, 20 and 28 are objected to because of the following informalities: transmit antennas are not previously referenced. For the purposes of clarity, it is suggested to change "each transmit antenna" to --each of a plurality of transmit antennas--.

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

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4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).
7. Claim 1 and 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over background of U.S. Patent No. 5,930,366 to Jamal et al. in view of U.S. Patent No. 4,796,279 to Betts et al. and U.S. Patent 6,567,482 B1 to Popovic.

Note: claim 1 line 6 the phrase "may be 180°" is not a positively recited claim limitation and therefore is not accorded patentable weight. It is suggested to replace it with the phrase --is 180°--.

For claim 35, background of Jamal et al. discloses a prior art method for configuring a downlink signal in a mobile communication system (column 4 line 22), comprising:

Generating a synchronization code (fig. 4 Cs)

Arranging a plurality of pilot symbols (fig. 4 Cp) on the time axis and the frequency axis (according to fig. 4 it's clear that there are a plurality of pilot symbols on the time axis. It's inherent that they're on the frequency axis as well as any mobile communication has to transmit using a frequency), and generating a second slot (fig. 4 Cp are in a plurality of second slots)

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For claim 35, background of Jamal et al. discloses all the subject matter of the claimed invention with the exception of the synchronization being a preamble composed of two symbols with a phase difference of  $180^\circ$  between them and the frame also having a second preamble having a specific pattern for each cell of a plurality of cells.

For the same issue of synchronization (column 2 line 2), Betts et al. teach a preamble composed of two symbols that are  $180^\circ$  out of phase with each other (column 2 lines 14-20). It would have been obvious to one of ordinary skill at the time of invention in the art to use a synchronization preamble at the beginning of the signal. The motivation for doing so is to synchronize different stations.

In a related field of endeavor, Popovic discloses a preamble being used for the purposes of downlink cell search (column 3 lines 66-67) and also discloses base station specific codes being used for cell search (column 3 lines 13-14). It would have been obvious to one of ordinary skill at the time of invention to include a code as part of the preamble for the purposes of cell search. The motivation for doing so is to use a known technique (preamble for cell search) to improve a similar method in the same way (ability to identify base stations).

**Claim 1** is rejected as the corresponding device claim to the method claim 35. The system of Jamal et al. inherently has the corresponding component to generate a synchronization code and possibly another component to generate the pilot symbols. It must also have some means to arrange them in a frame as indicated in fig. 4 otherwise it would not be able to perform those functions. One skilled in the art would be able to modify the device to utilize the teachings of Betts et al. for the same reason as given previously. One skilled in the art would also incorporate the teachings of Popovic for the same reason given previously.

***Allowable Subject Matter***

8. Claims 13-34 are allowed. For claims 13-24 the prior art does not provide teach the combination of a synchronization estimator and a cell searcher. For claims 25-28 the prior art does not teach a combination including the first preamble and an estimation of correlation of a cyclic prefix. For claims 29-34, the prior art does not provide a motivation for excluding results as detailed in claims 29 and 32 in particular.

9. Claims 2-12 and 36-38 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. For claims 2-3, the Jamal et al. reference does not specifically a predetermined time period and the prior art does not provide motivation. For claims 4-6, the prior art does not teach preambles being divided into groups. For claims 7-8 and 37 the prior art the prior art does not provide motivation for using different sets of pilot patterns specific for each cell. For claims 9-12, the prior art provides no motivation to further modify the system to utilize different transmit antennas. For claim 36-37, the prior art does not disclose a combination including organized transmission on subcarriers.

***Conclusion***

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Document Number Country Code- Number-Kind Code	Date MM- YYYY	Name	Classification
US-5,995,483 A	11-1999	Marchok et al.	370/207
US-2003/0169702 A1	09-2003	Ryu et al.	370/320
US-6,934,553 B2	08-2005	Kuroiwa et al.	455/500
US-6,961,565 B2	11-2005	Tanno et al.	455/434
US-6,965,633 B2	11-2005	Sun et al.	375/145

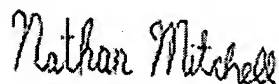
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US-7,061,966 B2	06-2006	Storm et al.	375/145
US-7,099,667 B2	08-2006	Saito et al.	455/437
WO 2078280 A2	10-2002	SCHAEFER et al.	H04L 27/00
EP 1411651 A	04-2004	Kazuyaki et al	H04B 007/26

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nathan Mitchell whose telephone number is (571)270-3117. The examiner can normally be reached on Monday through Friday 7:30 AM to 5:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dang Ton can be reached on (571)272-3171. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Nathan Mitchell/nam



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SUPERVISORY PATENT EXAMINER